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ABSTRACT

An advisory committee, in response to a 1985 resolution by the Virginia General Assembly, presents this analysis and makes recommendations concerning state school bus safety. The report is divided into eight topics; six appendices comprise three-fourths of the study. "Origin of the Study" states requests to be investigated by the department of education (included in Appendix A) and lists the 15 committee members. "Rationale for the Study" describes concern for children's safety and discusses the use of safety belts versus another method of assuring passenger safety (i.e., high, padded seat-backs). "Historical Overview of Pupil Transportation in Virginia" traces the history of school bus services and accident rates. "Analysis of Statistics for Accidents, Injuries, and Fatalities" includes accident report data for 1980-85, presented in Appendix B. "The Work of the Advisory Committee" details committee research activities, including a safety questionnaire (Appendix E), a summary of investigative reports, status of bus maintenance, and a report supporting use of seat belts. "Committee Discussion of Other Issues" examines (1) danger areas outside the bus and (2) driver qualification. "Comments and Recommendations" addresses topics and makes the recommendation that safety belts are inappropriate in buses; construction variables do not allow for their practical use. Local option for the use of seat belts was opposed by the committee. The conclusion describes the committee's approach. (CJH)

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REPORT OF THE DEPARTMENT OF EDUCATION

On School Bus Safety

TO THE GOVERNOR AND THE GENERAL ASSEMBLY OF VIRGINIA

House Document No. 10

COMMONWEALTH OF VIRGINIA
RICHMOND
1986

EA 018 850

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Report of the
Department of Education
On School Bus Safety
To
The Governor and the General Assembly of Virginia
Richmond, Virginia
December, 1985

TO: The Honorable Charles S. Robb, Governor of Virginia
and
The General Assembly of Virginia

ORIGIN OF THE STUDY

House Joint Resolution No. 228, agreed to during the 1985 Session of the General Assembly, requested the Department of Education to conduct a study of school bus safety. The resolution may be found in Appendix A of this report.

House Joint Resolution No. 228 requested that the Department of Education:

1. Examine the need for equipping new and old school buses with seat belts.
2. Examine the efficacy of using seat belts for small students, particularly those in Grades K-3.
3. Examine whether the use of seat belts on school buses will result in behavior modification in the use of seat belts in cars.
4. Examine the feasibility of requiring instruction on seat belt safety in the health curricula.
5. Examine the need for emergency communication devices on school buses.
6. Examine the need for inspection of older buses and revision of their capacities.
7. Examine the appropriateness of current driver qualifications.
8. Examine the appropriateness of the sites for loading and unloading of students.

A 15 member advisory committee was appointed by S. John Davis, superintendent of public instruction, to assist the Department of Education in conducting the study of school bus safety. A list of the members and the organization represented by each member follows:

Mr. William E. Beamer, Member, Newport News City School Board	Virginia School Boards Association
Miss Jeane L. Bentley, Associate Director Health, Physical Education and Driver Education Services	Department of Education
Mr. M. Gary Blumenstein, Classroom Teacher, Virginia Beach Public Schools	Virginia Education Association
Captain R. L. Bumgardner, Safety Officer	Department of State Police
Mr. R. A. Bynum, Study Coordinator, Pupil Transportation Service	Department of Education

Dr. William H. Cook, Physician	The Medical Society of Virginia
Mr. David Cozzolino, Transportation Supervisor	Russell County Public Schools
Mr. John R. Easter, Attorney-at-Law	Virginia Congress of Parents and Teachers
Mr. Thomas R. Fulghum, Assistant Superintendent, Operations and Planning, Chesterfield County Public Schools	Virginia Association of School Administrators
Mr. John T. Hanna, Deputy Commissioner	Department of Motor Vehicles
Mr. Joseph P. Higgins, Transportation Director	Fairfax County Public Schools
Mr. Forest G. Jones, Director, Maintenance and Operations	Salem City Public Schools
Mr. Don L. Long, Transportation Director	Norfolk City Public Schools
Mr. James W. Severt, Chairman	Virginia Transportation Safety Board
Mr. Nathan H. Young, Jr., Transportation Director	Henrico County Public Schools

RATIONALE FOR THE STUDY

The safety of school children traveling on school buses is of paramount importance to parents and school personnel. School buses in Virginia provide transportation services for more than 720,000 public school pupils twice each school day. Over the past three years there has been an average of one accident for each 114,419 miles traveled, and one pupil injury inside the bus for each 529,954 miles traveled. During the same period three pupil fatalities and 20 pupil injuries have occurred outside the bus, when children as pedestrians were struck by another vehicle or the bus itself. There were no pupil fatalities and 448 pupil injuries inside the bus during this three-year period. Most of these injuries were minor and many of the injuries were not verified.

In recent years, public discussion of the need for protection of occupants of automobiles (i.e. safety belts and automatic protection devices) has increased greatly. Likewise, the issue of safety belts on large school buses has become a topic of much discussion. The appropriate method for safeguarding the safety of children in school buses has been questioned by organizations such as Physicians for Automotive Safety, the American Medical Association, and the Virginia Congress of Parents and Teachers. These organizations favor the use of safety belts in all buses and have actively supported mandating their installation. Conversely, the Virginia Department of Education and the National Highway Transportation Safety Administration have for some years taken the position that "compartmentalization," i.e. requiring high, padded seat backs, is the more appropriate method for assuring the safety of all children in school buses. These divergent positions are based on conflicting interpretations of data and studies relating to school bus operation.

Prior to 1985, the use of seat belts and other important issues relating to school bus safety had not been studied by the Virginia legislature for at least 10 years. Therefore, the General Assembly determined that a study of school bus safety was both necessary and timely.

HISTORICAL OVERVIEW OF PUPIL TRANSPORTATION IN VIRGINIA

Current data indicates that pupil transportation services were provided by a few public schools as early as 1902. The legal authority for the Board of Education's control and supervision of public school buses was contained in laws enacted in 1919; however, Board minutes dated September 26, 1926, include the first known statement of policy regarding transportation of pupils. While General Regulations and Requirements for Drivers and School Buses were promulgated in 1928, it was not until 1939 that the Board adopted more detailed standards for school buses. Two school bus driver instructors were employed in 1942 at the request of the U. S. Office of Defense Transportation. In July 1946 the Pupil Transportation Service was created in the Department of Education.

Pupil transportation services have evolved through the years, as have other programs of Virginia's public schools. Significant developments occurred during the periods of rapid school consolidation between 1940 and 1960 and during the late 1960s and early 1970s. It was during the latter period that cities began transporting most of their public school pupils.

In 1983-84, the last year for which complete data are available, 130 of the 139 public school divisions in Virginia operated approved school buses regularly on home-to-school schedules. In that year, approximately 721,000 pupils, about 79 percent of the total number of pupils in average daily attendance in Virginia's public schools, were transported daily on 9,042 buses that traveled about 80,000,000 miles. The total operational cost, including capital expenditures, exceeded $113,000,000. Transportation also was provided for federal programs, summer school, special trips (extracurricular), etc. in addition to the home-to-school operation. Twelve city school divisions arranged for approximately 12,000 pupils to ride public transit buses. Additionally, special transportation (use of cars, airlines, taxis, transportation by parents, private school vehicles, etc.) was provided for 1,734 handicapped pupils. State categorical aid to the localities supported about 30 percent of the total cost of operation, not including cost of equipment.

Public school bus transportation services in Virginia, as in all but two other states, are provided by the local school divisions under laws and regulations promulgated by the state. Detailed minimum standards and specifications for school buses are provided to the localities. Special features in bus design and equipment require prior approval from the Department of Education. The development of policies for day-to-day operations, such as selecting/training school bus drivers, establishing bus routes and disciplining pupil riders, is the responsibility of local school boards.

Virginia's school bus standards, in most instances, equal or exceed the Recommended National Standards for School Buses. Some Federal Motor Vehicle Safety Standards became effective on April 1, 1977. Specifically, they deal with school bus seating and crash protection, emergency exit requirements, strength of panel joints, and fuel system integrity. Generally, states are pre-empted in these subject areas. School buses built prior to April 1977 are referred to as pre-DOT (Department of Transportation) buses and subsequent models are referred to as post-DOT buses. Some

other federal motor vehicle safety standards, such as brake standards, apply to schoc buses as well as to trucks. Federal school vehicle regulations also apply to private/parochial schools, but Virginia Board of Education regulations apply only to public school vehicles.

ANALYSIS OF STATISTICS FOR ACCIDENTS, INJURIES, AND FATALITIES

Reports of accidents involving school buses, pupils, and personnel who ride school buses, including injury and death while crossing highways or waiting at bus stops, are required by the Board of Education. For purposes of analysis on a mileage basis, only accidents, injuries, and fatalities that occurred while buses were transporting pupils are included in "Data On School Bus Accident Reports, 1980-1985" (See Appendix B).

Fatalities

During the past 34 years, 16 pupils have been killed in school buses. A list of these fatalities may be found in Appendix C. Operational statistics, including accidents, injuries, and fatalities occurring both inside and outside of school buses for the past 20 years, are shown in Appendix D. Five of the 16 pupil fatalities inside buses occurred in March 1951 when a train struck a school bus. Ten of the 16 pupil fatalities resulted when the buses were struck by large trucks. One of the 16 pupil fatalities occurred when a bus went over a ten-foot embankment.

Forty-nine pupils have been killed outside school buses during the past 20 years. Twenty-seven of these pupils were struck by buses and 22 were struck by other vehicles near the bus stop.

Injuries Inside the Bus

The number of pupil injuries occurring inside and outside buses has fluctuated during the past 20 years, as indicated in Appendix D. A follow-up review of injuries reported inside buses was completed for the 1983-84 and 1984-85 school years. Of the 195 pupil injuries reported inside school buses during 1983-84, time permitted the review of the circumstances surrounding 191 of the injuries. The review showed that (1) three pupils sustained broken bones, (2) 29 pupils in grades K-3 were injured, and 126 pupils in grades 4-12, were injured; (3) because of injuries 89 pupils missed one day from school, 24 missed two days, 17 missed three days, eight missed four days and 19 missed five or more days, and (4) 34 alleged injuries could not be verified because of lack of documentation.

Of the 151 pupil injuries that occurred inside school buses during 1984-85, time and circumstances permitted a review of 147 of the injuries. The review showed that (1) one pupil sustained a broken hand; (2) 20 pupils in grades K-3 and 62 in grades 4-12 were injured; (3) 48 pupils missed one day from school, 19 missed two days, 17 missed three days, two missed four days and six missed five or more days; and (4) 65 reported injuries were not verified.

Injuries and Fatalities Outside the Bus

A follow-up review on the pupil injuries occurring outside the buses during 1982-83 through 1984-85 was completed. During 1982-83, six pupils were struck by their school bus, three of which sustained multiple fractures. Two of the six pupils missed one day from school, one missed two days, two missed three days and one missed five or more days. Five of the six pupils were in Grades K-3.

Five pupil injuries occurred outside the bus during 1983-84; one pupil was struck by the bus and four were struck by other vehicles. One pupil missed one day from school and four missed five or more days. Four of the five pupils were in the grades K-3.

For 1984-85, 12 pupils were struck outside the bus. Five of the 12 pupils were struck by buses and seven pupils were struck by other vehicles. Three of the 12 pupils sustained multiple fractures and three pupils each sustained a fractured leg. Two of the 12 pupils injured missed one day from school, one pupil missed two days, three pupils missed three days, and six pupils missed five or more days.

In an effort to reduce further the incidence of pupils being struck by school buses, the 1982 session of the General Assembly provided funds to purchase hemispherical mirrors to be installed on the right front fender of all school buses in Virginia. The mirrors were installed on all publicly-owned school buses during the summer and fall of 1982. During the previous year, four pupils were killed when struck by their bus. In 1982-83, two pupils were killed: one was struck by the front wheel of the bus and one was struck by the rear wheel of the bus. In 1983-84, a pupil was killed when struck by a passing vehicle. No fatalities occurred outside the school bus during 1984-85.

Activity Trips

Accident data pertaining to activity trips were analyzed for a three-year period from 1982-83 through 1984-85. During this period, 153 accidents were reported. Thirty-three of the accidents occurred at night. Six pupils were injured inside school buses during the period.

Mechanical Failures

During 1984-85, 14 accidents were reported to have been caused by mechanical failure in school buses. Nine of the accidents were reported to have been caused by defective handbrakes which allowed the buses to roll forward or backward into other vehicles. Four accidents were reported to have been caused by service brake failure, and one accident was caused by failure of the steering mechanism of the bus.

THE WORK OF THE ADVISORY COMMITTEE

The Advisory Committee met on August 6-7, 1985, to receive information developed by the Department's staff, to hear presentations by a representative of the school bus body industry, the Virginia Crash Investigation Team, and to identify further information needed to complete the study. The committee met again on October 1 to hear a presentation by a representative of the American Academy of Pediatrics which supports the use of seat belts in school buses, to discuss the information that had been collected, and to plan for drafting and approving the committee's report. The committee met again on November 19 to review and approve the final report.

Safety Questionnaire

To obtain information from local school divisions, the Department of Education developed a questionnaire which contained 36 questions pertaining to specific issues addressed in House Joint Resolution No. 228 and other issues directly related to the safe operation of school buses. Responses were received from the 131 school divisions that operate school buses. The tabulated results were made available to the Advisory Committee. (See Appendix E)

Federal and State School Bus Regulations

The committee reviewed the Regulations Governing Pupil Transportation Including Minimum Standards for School Buses in Virginia, September 25, 1981. It was noted that the Virginia school bus standards and annual chassis specifications cover all major component parts of school buses, and that compliance with the requirements is monitored during the Department's annual inspection of buses. In addition to the Virginia standards, 30 of the 50 Federal Motor Vehicle Safety Standards (FMVSS) apply to buses, including school buses. Eight of these are of special interest:

(1)	FMVSS No. 217	Bus Window Retention and Release
(2)	FMVSS No. 220	School Bus Rollover Protection
(3)	FMVSS No. 221	School Bus Body Joint Strength
(4)	FMVSS No. 222	School Bus Seating and Crash Protection
(5)	FMVSS No. 301	Fuel System Integrity
(6)	FMVSS No. 302	Flammability of Interior Materials
(7)	FMVSS No. 105	Hydraulic Brakes
(8)	FMVSS No. 121	Air Brakes

These federal regulations supersede state standards in these areas.

Canadian and Body Company Crash Test

A. The committee viewed a film and read the report on the School Bus Collision Tests conducted at Transport Canada's Motor Vehicle Test Centre in Blainville, Quebec. The Canadian government contracted with Arvin Calspan of Buffalo, N.Y. for technical assistance on these tests. The following summary appears in the report:

> "Tests of three school buses were conducted to determine the adequacy of the current occupant protection standards in preventing death and injury, and also to determine the effect of seat belts on the level of occupant protection. The school buses were run into a fixed collision barrier at 48 km/h., approximately 30 mph., with belted and unbelted instrumented dummies used to estimate injury. The results indicate that, in a frontal collision, belted school bus occupants are likely to suffer more serious injury than unbelted ones."

B. The committee also viewed a film and received written information on tests conducted for Thomas Built Buses, Inc., High Point, N.C., at the Arvin Calspan Full Scale Test Facility in Buffalo, N.Y. These tests involved one frontal crash and two side crashes of a 16-passenger cutaway chassis model with a school bus body applied to the chassis behind the driver's seat. A spokesman for Thomas Built Buses reported:

> "The purpose of these three tests was to give factual test data as to the effectiveness of compartmentalization versus belts on larger school buses. No side impact tests have been done on school buses since the introduction of the 1977 Federal Motor Vehicle Safety Standards on Occupant Protection. The bus chosen for the test was a Thomas Minotour 16-passenger bus. This size bus was chosen over the larger buses with the feeling that this would be the most extreme situation and would give us the most violent results, and if things went satisfactorily in this size bus, we could feel assured that it would be even better in the larger buses. The factual results in the reports indicate clearly that compartmentalization works as it was designed to work in frontal impacts or side impacts. These tests also indicate that in the case of the side impact, there seems to be very little significant difference between the belted and unbelted

dummies in these test conditions relating to head and chest injuries."

Summary, Virginia Crash Investigation Team Reports

Mr. David O. McAllister, Manager, Virginia Crash Investigation Team, Department of Motor Vehicles presented a synopsis to the committee of the following school bus crashes that involved severe collision forces:

1. February 1985, a 1975 model (pre-DOT) bus was rear-ended by a tractor trailer. The force of impact caused the bus to roll over and strike a tree. There were 16 injuries, one serious. Driver alertness was credited with saving lives: the driver saw the crash coming and directed pupils in the rear of the bus to move forward as he accelerated. The rear of the bus was damaged substantially. No one was ejected and the padding on this pre-DOT bus reduced the severity of injuries sustained by the pupils.

2. March 1977, a 1972 model (pre-DOT) bus was rear-ended by a tractor trailer while stopped to take on pupils. There were three fatalities and 30 injuries. Two of the pupils who were killed were sitting in the rear seats of the bus. The third was seated on the front seat of the bus behind the service door and was thrown out the door at impact and killed when the bus rolled over.

3. Fall 1981, a 1980 model (post-DOT) bus was sideswiped by a tractor trailer and knocked down an embankment. There were 16 injuries, all minor. The bus held up well and exits were usable. Due to the bus being equipped with well padded high back seats, the number of pupils injured and the severity of their injuries were reduced.

4. Winter 1983, a 1978 model (post-DOT) bus was hit head-on by a Volkswagen which ended up under the bus. The three occupants of the Volkswagen were killed but there were only minor injuries to 13 pupils in the bus.

5. April 1984, a 1980 model (post-DOT) bus was struck by a train moving at 49 mph., causing the bus body to separate from its chassis. There were 26 injuries, two of them serious. The bus driver died five days later. Considering the severity of the collision, the post-DOT design of the bus was credited with saving lives and reducing the number of serious impact injuries to pupils.

The Virginia Crash Investigation Team has investigated approximately 15 school bus crashes in the past 13 years. The buses, particularly the post-DOT models, performed extremely well in collisions. The team's recommendations to the committee were:

1. Continue upgrading education and training for bus drivers;
2. Continue to focus on improved bus maintenance programs;
3. Continue to study selected bus stop locations and turnarounds;
4. Emphasize lowering noise levels inside buses to aid driver concentration;
5. Accelerate the removal of all pre-1977 buses and ensure that school divisions have newer buses measuring up to the latest crash-worthiness standards;
6. Emphasize efforts to prevent fatalities and injuries outside of buses;
7. Re-enact objective or measurable physical standards for school bus drivers during physical examinations.

In short, the crash team, like the National Transportation Safety Board, National Highway Traffic Safety Administration, Insurance Institute for Highway Safety and the National Safety Council feels that more benefits can be gained from these and other improvements in pupil transportation than by installing safety belts on school buses.

Reports Reviewed by the Committee

A. National Transportation Safety Board Report

The committee reviewed National Transportation Safety Board Report Number NTSB/HAR-85/02 on the Carrsville school bus/train collision because it was a major accident. A synopsis of the report and recommendations follows:

> "About 3:25 p.m. on April 12, 1984, a westbound Chesapeake and Ohio Railway Company freight train traveling about 49 mph struck the front right side of a northbound 1980 Isle of Wight County schoolbus stopped at a railroad grade crossing on State Route 615 near Carrsville, Virginia. The weather was clear, the sun was to the schoolbus driver's left, and the train's whistle and bell were sounding before the collision. There were crossbucks on both sides of the single track crossing. The driver's sight distance in the direction of the approaching train was about 1/3 of a mile. The 64-passenger schoolbus body separated from the chassis at impact, rotated counterclockwise 180 degrees, rolled over 270 degrees to the right, and came to rest on its left side about 80 feet southwest of the crossing. Of the 26 school-aged bus passengers, two were injured seriously, one had moderate injuries, and the other 23 sustained minor injuries. The bus driver was seriously injured and died five days after the accident. The train crew was not injured. The National Transportation Safety Board determines that the probable cause of this accident was the school bus driver's failure to stop before driving onto the railroad crossing to determine that it was safe to proceed."

The Carrsville crash was a very severe accident involving a 1980 model (post-DOT) school bus. In summary, the NTSB Report indicates that:

(1) The roof of the bus body performed in a crash-worthy manner which provided survivable occupant space,
(2) There was no interior body panel separation due to improved crash-worthiness resulting from the federal joint strength standards,
(3) There was no seat leg separation and all passenger seats retained their original spacings due to compliance with the seating and crash protection standards, and
(4) Numerous minor injuries occurred when occupants struck interior surfaces other than seats and barriers.

As a result of its investigation of this accident, the National Transportation Safety Board made the following recommendations:

"--To the State Directors of Pupil Transportation of the 50 States and the District of Columbia:

> Encourage local school jurisdictions to establish and enforce procedures to systematically monitor school bus driver compliance with railroad crossing stop requirements and routing requirements which include on-scene observations of driver performance. (Class II, Priority Action) (H-85-4)

Encourage local school jurisdictions to issue an announcement to parents and students at or near the start of each school year which (1) states the jurisdiction's rules regarding school buses stopping at railroad crossings, (2) requests that school bus drivers who fail to comply be reported to a designated school official, and (3) provides the name and telephone number of the official. (Class II, Priority Action) (H-85-5)

Encourage local school jurisdictions to: discuss with driver applicants during the selection process the physical and mental demands placed upon school bus drivers, encourage in-service drivers to discuss their problems and their satisfaction with the present job assignment with their supervisors during routine contacts and during performance evaluations, and encourage supervisors to have frequent contact with their school bus drivers to discuss and resolve behavior problems concerning school bus passengers. (Class II, Priority Action) (H-85-6)"

"—To the Virginia Department of Education:

Consult without delay with the Virginia Medical Society to promulgate objective minimum physical standards for school bus drivers as specified by Section 22.1-178 of the Code of Virginia, as amended in 1979. Incorporate the standards in the prescribed physical examination forms and specify the health history that medical examiners shall obtain when examining school bus driver applicants. (Class II, Priority Action) (H-85-7)"

The report indicates further that in 1983, "The Board stated that it did not believe there is sufficient justification at this time to recommend extending the mandatory passenger restraint system requirements to large school buses." Conclusion No. 15 in the Carrsville report stated that "The majority of the minor injuries and the one moderate injury to the occupants seated next to the right side wall probably were sustained when these children struck the right side wall. The installation and use of seat belts would not have prevented or mitigated these injuries."

B. National Highway Traffic Safety Administration Report

A report entitled Safety Belts In School Buses, June 1985 issued by the National Highway Traffic Safety Administration, U. S. Department of Transportation, contains a review of facts and opinions about the efficiency of providing safety belts in large school buses. The "Executive Summary" in the report follows:

"School buses are the safest form of surface transportation. In 1983, 42,589 people were killed in traffic accidents. Only 17 were school bus occupants. On average for 1981-1983, 11 passengers and 1 driver were killed in school bus accidents and 30 were seriously injured. The subject of occupant protection in large school buses is complex. Based on extensive research and public rulemaking, the National Highway Traffic Safety Administration (NHTSA) concluded by 1977 that the concept of "compartmentalization" - i.e., strong, well-padded seats with high seat backs and better seat spacing to safely retain and cushion students during a crash - would be an 'automatic' system to protect children effectively in large school buses without requiring safety belts. All available test data and real world accident data indicate that this concept has worked extremely well.

NHTSA believes that the occupant protection required in school buses manufactured after April 1, 1977, plus the inherent safety of a highly recognizable vehicle that travels on a regular route, provide a high level of safety. There is insufficient data available to demonstrate whether safety belts would increase occupant protection. The number of school bus occupant deaths and serious injuries is so low that assessing the extent to which safety belts could either prevent deaths or injury, or cause them is not feasible.

In view of the effectiveness of the current safety standards, and the excellent safety record of school buses generally, we do not believe that a Federal requirement for safety belts in large school buses is warranted. The National Transportation Safety Board reviewed this matter in 1983 and found that current NHTSA standards appear to be effective in eliminating or substantially reducing the majority of school bus passenger injuries.

Small, van type buses (under 10,000 pounds gross weight) are required to have safety belts for all occupants as standard equipment. The agency believes that safety belts are necessary and effective in providing occupant protection in those vehicles, because of their similarity to cars, and we encourage all passengers to wear their belts whenever the vehicles are in motion.

It is important to emphasize that the Federal standards specify the minimum safety requirements applicable to school buses. Nothing prohibits a state or local jurisdiction from purchasing buses equipped with safety belts."

The report cites several problems which prevent successful retrofitting of school buses with safety belts, especially, those buses built before the the 1977 safety standards were instituted. The report suggests that consideration be given to alternate investments in school bus safety, such as replacement of pre-DOT model buses and improved driver training and vehicle maintenance. The report also notes that the question of whether the use of safety belts in school buses would encourage increased use of safety belts in private vehicles has not been answered.

Age and Maintenance of Buses

A review of information on the age of public school buses, as of January, 1985, indicated that 5,537 buses (51% of total number) were 1978 or newer models built to the latest federal school vehicle standards (post-DOT). Of the 5,398 buses in service which were built prior to the institution of the federal standards (pre-DOT), 4,743 (44%) were between seven and 12 years old, and 555 (5%) were 13 or more years old.

The Committee noted the statements of the National Transportation Safety Board, the National Highway Traffic Safety Administration, and the Virginia Crash Investigation Team concerning the improvement of crash-worthiness, and the resulting safety provided for children in post-DOT buses. This was reinforced by an apparent reduction in the number of pupil injuries and deaths inside Virginia school buses in recent years. To understand the differences between the pre-DOT and post-DOT buses, the committee viewed a bus of each type.

The inspection program for public buses was described as involving three different inspection procedures for each bus:

(1) An annual inspection by Department of Education personnel of all buses for safety

and compliance with standards and specifications.

(2) A detailed annual inspection by licensed inspectors under the auspices of the Department of State Police.

(3) Monthly inspections by local personnel following guidelines and forms provided by the Department of Education.

A comprehensive preventive maintenance manual entitled Preventive Maintenance Manual for Virginia School Bus Maintenance Personnel and School Administrators was published by the Department of Education in November 1983. The program outlined in the manual was upgraded from guidelines to requirements effective June 1, 1985. The committee considered the inspection/maintenance programs to be adequate on paper; however, information was received to the effect that the bus maintenance programs in about 10 percent of the school divisions may be below an acceptable level. This preliminary view was based primarily on results of inspections conducted by the Pupil Transportation Service, Department of Education. In addition, the Committee felt that the local and Department of Education inspections for buses over 12 years of age should be more stringent and more frequent.

Information was received to the effect that some school buses are operated in Virginia by city governments under city transit charter provisions. It was noted that these buses are not always in compliance with Virginia school bus construction standards and inspection/maintenance requirements.

Safety Education

Ms. Arlene Cundiff presented an outline of the scope and sequence of the safety education materials covered in the grade K-10 curriculum, including a chart showing how safety is taught in grades K-8. The staff of the Department's Health, Physical Education and Driver Education Service expressed concern that no mandate has been given on the amount of time required for teaching health education in the elementary grades. The current requirement is for a comprehensive health education program. Several publications developed by the Department were presented to the Committee: "School Bus Safety Patrol Bulletin," "Street and Bus Safety Guide," and "Your Child Starts to School." In addition, Ms. Cundiff explained the use of a Beltman Kit for grades K-5. The kit contains a series of tapes and filmstrips, and a seat belt which can be attached to a child's chair to teach how to fasten and unfasten the belt. Committee members asked why the curriculum contained nothing dealing specifically with seat belt instruction. It was explained that seat belt use is taught in the section of the guide dealing with motor vehicle safety. A committee member suggested that in the next printing of the "Health Education Curiculum Guide, K-7", safety belt use and instruction should be addressed at the point when the child is first exposed to safety concepts.

Ms. Jeane Bentley later updated the Committee on plans for revision of the Health Education Curriculum Guide. The revised guide would include safety belt instruction at the primary grade level. It was suggested that a specific amount of time, i.e., 90 minutes per week, be scheduled for health education instruction in the primary and elementary grades. Further, Ms. Bentley said safety belt instruction would be reinforced as part of the substance abuse program in the fifth grade.

Pupil Standees

It was noted that many telephone calls and some written communications are received each year by the Department and local school divisions concerning pupils

standing while riding school buses. Pupil Transportation Regulations allow some pupils to stand under certain circumstances. Information obtained from the questionnaire (Appendix F) indicated that 46 school divisions permitted standees on buses. Of the 46, 21 indicated that additional buses would be needed to eliminate this situation. Approximately 1,500 pupil standees daily, with one pupil injury in 1983-84 and no injuries in 1984-85, were reported. The Committee considered several facets of this question, including the unpredictable impacts upon school populations around military bases and in rapidly developing areas. The Committee undertook to seek ways to reduce the number of pupils who must stand on school buses.

Presentation in Support of Seat Belts in School Buses and Improved School Bus Safety

Dr. Joseph Zanga, representing the Virginia Pediatrics Society and the American Academy of Pediatrics(AAP), presented his organizations' position on improved school bus safety. Dr. Zanga is the director of the emergency room and outpatient pediatric services at the Children's Medical Center of the Medical College of Virginia. In support of this position, Dr. Zanga utilized studies, statistics, data on actual use of safety belts, and other safety improvements on school buses and presented reasons for the need for changes in the present policy for school bus safety.

Dr. Zanga discussed excerpts from National Highway Transportation Safety Administration's (NHTSA) report on Safety Belts In School Buses, June 1985 which he felt were ignored by bus manufacturers and their organization. Specifically, he said, that the report correctly concludes that "there are no studies to prove....that seat belts would absolutely save lives in school buses." However, he noted such tests are impossible to conduct realistically because we can not put children in the bus and crash the bus. Although some tests of safety belts can be conducted with dummies, the validity of such tests is questionable. Further, he said children cannot be protected from ejection by compartmentilization.

The results of the Canadian study need to be viewed with caution, in Dr. Zanga's opinion. He quoted from the NHTSA Report: "In examining the Canadian tests, several factors must be considered. A 30 mph barrier crash force for a large bus is an unlikely occurrence. For example, a head-on crash between a large school bus and a full-size car, both traveling at 55 mph, would be less severe to bus occupants than the 30 mph barrier test. Also, only one size dummy was used which typically represents a junior high school student. The geometry for young children would be significantly different with likely different results. Taken together, the results of the Canadian tests should be viewed with caution."

A study conducted in 1967 by UCLA was cited by Dr. Zanga as the best study performed to date. This study used child-size dummies and concluded that school bus seats used at that time were not designed to accommodate the added stress of multiple lap belts. The UCLA group designed the ultimate safety seat which included seat belts. The UCLA seat has never been used, however, according to Dr. Zanga, because it is too costly.

Dr. Zanga noted statistics demonstrating that the most common accidents involving pupil fatalities are rollover accidents and side-impact crashes. The AAP maintains that the child receives the most protection from seat belts in side-impact and rollover crashes. There is evidence suggesting that the child is protected by safety belts in other kinds of crashes as well.

He reviewed the following excerpts from the AAP's Policy Statement on School Bus Safety:

"Unsupported arguments have been presented in an effort to prevent seat belt installation on school buses. Among these are:

1. Children can't handle the buckle adequately. (The American Academy of Pediatrics notes that all children, given their familiarity with seat belts and buckles, should be able to satisfactorily buckle and unbuckle seat belts.)

2. The buckles would entrap children and could leave them dangling from the ceiling in accidents in which the bus is overturned. (This is true, but it is still preferable for children to be strapped in rather than thrown out of the seat or the vehicle at the time of an accident.)

3. Wearing seat belts would produce internal injuries. (With the restraints presently available, any school aged child can safely wear a seat belt.)

4. Children could use the belts as weapons. (Children have much better weapons available including lunch boxes and books. In addition the newer, lightweight, smaller, retractable seat belts now available are unlikely to be effective as weapons.)"

Dr. Zanga said that there was not a lot of actual experience in the use of seat belts. At least, 26 school districts require seat belts in their school buses in this country; however, there may be as many as 40 or 50 districts that use seat belts. He also stated that there were a number of states, notably New York, that are moving towards mandating seat belts. The City of Etobicoke, Ontario, Canada has successfully used seat belts on school buses since 1975. No accidents have occurred to prove their value.

Dr. Zanga said that the committee and staff of the AAP have studied all available literature and have concluded that the following actions should be taken:

"1. Seat backs should be elevated to 28 inches. This is four inches above the height now manufactured by federal regulations and will support and cushion a child's head and neck.

2. All seat backs and tops should be padded with trim materials that adequately absorb impact. The padding should completely cover the entire rear of the seat in addition to the top rail. The padding also should be placed on all stanchions and "modest" panels. Seat construction should be designed to eliminate sharp or unyielding objects that could cause or worsen injury.

3. Seat belts should be required on all newly-manufactured school buses--regardless of their size and the number of pupils transported.

4. Adequate and appropriate bus drivers training should be mandatory in all school districts and should include provision for health screening on a periodic basis, including vision and hearing evaluations."

In discussing the use of seat belts on school buses as an educational issue, Dr.

Zanga noted that many medical and parent groups believe that young children must be taught to use safety belts at all times.

COMMITTEE DISCUSSION OF OTHER ISSUES

Danger Zones Outside The Bus

The statistics on injuries and deaths outside school buses, contained in this report under Analysis of Statistics for Accidents, Injuries and Fatalities, Page 6, were discussed at considerable length. Based on the number of deaths and the severity of injuries, the hazard to students outside the bus is considered to be a very serious problem. In Virginia 49 pupils were killed outside their public school buses in the last 20 years, five times the rate of deaths inside school buses. Records show that injuries to pupils outside the buses are usually much more severe.

The Committee noted that numerous safety campaigns have been directed toward solving this problem but that success appears to be limited. The Committee considered the fact that pupils are exposed to the possibility of such accidents approximately 1.5 million times each school day under widely varying circumstances. They agreed that safety precautions outside the buses must continue to be emphasized. These continuing efforts should include: (1) pupil rider safety education offered periodically both in the classroom and in demonstrations/practice; (2) daily consultation with the pupils by the drivers as needed; (3) continued search for new technical developments such as functional warning sensors; (4) more use of crossing control arms to prevent pupils from crossing immediately in front of the bus; (5) encouraging parents to accompany their children to and from the bus stops as often as possible, and (6) enlisting the aid of parents in reinforcing the bus safety concepts taught by the schools. The consensus of the Committee was that no single measure would provide a solution to this problem.

Sites for Loading and Unloading Pupils

Board regulations require school bus routes to be reviewed at least once each year for safety hazards. Section 46.1-250, Code of Virginia, stipulates that stops are to be made only at points where the bus can be seen clearly for a safe distance in both directions. The Committee agreed that the location and the safety condition of stops can only be determined effectively on the local level. The Committee also discussed the 8-lamp traffic warning system which uses four amber lamps for warning motorists of bus stops and four red lamps to indicate that buses are stopped to pick up or discharge pupils. It was noted that approximately 38 states are using the 8-lamp system on buses. The committee felt that this system would enhance enforcement of the "school bus stop law". The Committee expressed an interest in assuring that the school bus warning sign (stop arm) is now required, pursuant to Section 46.1-287, Code of Virginia. The volume and directional conflicts of automobile, pedestrian, and school bus traffic on school sites also were discussed.

Driver Qualifications/Supervision and Evaluation

A summary of the present state requirements for school bus drivers, concerns expressed by the National Transportation Safety Board, and the concerns of several local school divisions were presented and discussed. A copy of the current requirements may be found in Appendix F.

The proposed revision of the "physical requirements for school bus drivers" was reviewed by the Committee. The revision was prepared by the Department of Education staff after consultation with the Medical Society of Virginia and is scheduled

for consideration by the Board of Education. The proposed "Physical Qualifications For School Bus Drivers" are based on the requirements of the Federal Bureau of Motor Carrier Safety. If adopted, the regulations would apply to private/parochial schools, as provided in Section 22.1-180, Code of Virginia.

At the state level, the Department of Education trains school bus driver instructors. These instructors train school bus drivers at the local level. A manual entitled "Virginia School Bus Driver Training Curriculum Guide" provides each instructor with material which all drivers should receive during the training period. Inasmuch as the average number of hours spent in the pre-service classroom instruction and other phases of the training varies from locality to locality, the Committee felt that a minimum number of hours of pre-service classroom instruction should be required of all drivers.

COMMENTS AND RECOMMENDATIONS

The Advisory Committee addressed each major topic mentioned in HJR 228, and other topics believed to have a significant impact on school bus safety. The Committee discussions were lengthy and detailed. Establishing priorities for the topics in terms of greatest need proved to be difficult because all safety items involving children are important. However, the first three topics, as listed below, were deemed to be of high priority.

1. Danger zones outside the bus - Experience in Virginia and nationally indicate that in an average year about five times more school pupils are killed or severely injured in accidents occurring outside school buses than inside the buses. While there have been repeated safety campaigns to reduce this problem in Virginia and only one fatality occurred outside a bus in the last two years (1982-83 and 1983-84), the Committee was concerned that the number of injuries that occurred outside school buses in 1984-85 indicates that the problem still exists.
Recommendation: That the Department of Education and local school boards continue to emphasize the need to protect pupils in the danger zones around school buses. This should include appropriate pupil rider safety education; constant attention by bus drivers and staff to encourage pupils to follow safe procedures at bus stops; encouraging parents to accompany their young children to and from bus stops, to reinforce the bus and safety instruction given by the schools; and consideration of the use of safety patrols and safety devices such as crossing control arms on buses transporting pupils.

2. Replacement of buses - Forty-nine percent of Virginia's public school buses were manufactured prior to April 1, 1977 (pre-DOT) the date when more stringent safety construction standards became effective. Five percent of these buses are reported to be more than 12 years of age. These pre-DOT model buses do not include such safety features as the fully padded seat backs and stronger seat frames, flame retardant interior materials, increased panel joint strength, greater fuel system integrity, improved bus window retention and release, and stronger structural roll-over protection. The crashworthiness of these buses, particularly those which have been in service for more than 12 years, is questionable.

Recommendation: That all pre-DOT school buses be replaced as soon as possible; that school buses be replaced after 10 years of age and that 12 years of age be established as the maximum age for approved school buses; that a feasibility study be conducted for funding the cost of replacing all pre-DOT model buses; and that all school buses

operated by city transit systems conform to state and federal school bus construction standards.

3. Pupils standing on school buses - Approximately 30 percent of Virginia's school divisions allow pupils to stand on school buses. While few injuries have been reported among standees, they are not afforded the same degree of protection as pupils who are seated while riding buses.
Recommendation: That standees not be permitted after the first 30 days of school, except under unforeseen emergency conditions as identified by the local school board.

4. Driver qualifications/supervision and evaluation - The Department of Education has estimated that approximately 55 percent of school bus accidents result from school bus driver error. The number of classroom hours for pre-service training of new drivers and the procedures for supervision and evaluation of drivers varies considerably among the school divisions. There are at present no objective physical qualifications for school bus drivers.
Recommendation: That a minimum of 12 classroom hours and 12 hours of behind-the-wheel training be required for new driver applicants; that supervision and evaluation (including a written evaluation) of drivers be carried out periodically; that the list of objective physical requirements that has been developed by the Department of Education with advice of the Medical Society of Virginia be promulgated; and that drivers be at least 18 years of age.

5. Instruction on seat belt safety in the health curricula - Instruction on the use of safety belts is included in the high school curriculum guides and in optional supplemental materials for use in the elementary grades. The amount of time to be devoted to health instruction, including the use of safety belts, is not specified for the elementary level.
Recommendation: That instruction on the use of safety belts be initiated at the kindergarten level and reinforced in grades 1-7.

6. Inspection and maintenance of buses - The three-phase inspection program and the preventive maintenance program (see page 19) for public school buses were judged to be appropriate. However, the Committee expressed concern for the safety of pupils in those school divisions in which the level of vehicle maintenance is considered to be marginal. The safety of older buses, particularly those over 10 years of age, was discussed in depth by the committee. The committee strongly recommends the replacement of buses over 10 years of age. However, if replacement is not immediately feasible, more stringent maintenance and inspection standards will be necessary. Therefore, the consensus was that necessary steps should be taken to ensure compliance with maintenance and inspection requirements.
Recommendation: That proper use of the inspection and maintenance programs for school buses (including school activity buses) be ensured; that buses over 10 years of age be subject to more stringent and more frequent inspections; and that school buses operated by city transit systems be subject to the school bus inspection/maintenance requirements.

7. Sites for loading and unloading pupils - The provisions of law and regulations relating to the location of school bus stops, and the review of routes at least once each year for safety hazards appear to be adequate. The choice of locations for bus stops and roads to be used can best be determined at the local level. Members of the Committee expressed concern about a continuing pattern of motorists passing school

buses while the buses are loading or unloading pupils.
Recommendation: That school divisions review traffic patterns on school sites and on future site plans to ensure the safest possible traffic arrangements for automobiles, buses, and pedestrians; that the eight-lamp warning light system (four amber and four red) be implemented on new buses as soon as possible; that the Department of Education promote the retrofitting of eight lamp systems on older buses; that the school bus warning sign (stop arm) be included as part of the "warning device" required on all school buses; and that an official study be conducted of the problem of motorists passing school buses while pupils are being loaded or unloaded.

8. The need for emergency communication devices - The response to the safety questionnaire by local school divisions supported the use of two-way communication equipment, but on assigned frequencies rather than on public citizen band channels. Board of Education regulations now permit either type to be installed on school buses, subject to local control.
Recommendation: That the use of communication equipment on school buses continue to be a local option, and that the use of assigned frequencies be encouraged.

9. The need for equipping new and old school buses with seat belts - This issue dominated the discussions of the Committee. The Committee members were agreed that school bus transportation has an excellent safety record in Virginia. However, all felt that every possible means should be employed to protect Virginia's children. During the course of the study, several crucial safety problems became apparent to the Committee, including the dangers outside the bus, the need to eliminate standees on buses, and the urgent need to replace older, substandard buses. The Committee members concluded that solutions for these critical issues were imperative.

The Committee unanimously supported the use of safety belts in cars. However, the differences between buses and cars make data relating to the use of safety belts in cars inapplicable to school buses. Although no studies establish conclusively that safety belts would enhance the safety of school bus riders, safety belts have been alleged to provide additional safety in side-impact and rollover accidents. Some organizations believe that habitual use of safety belts on school buses might increase the use of safety belts in automobiles. However, in view of the inconclusive data on the value of seat belts in school buses, the Committee agreed that a requirement for the mandatory use of seat belts in school buses is not indicated. The retrofitting of buses with safety belts was not considered efficacious by the Committee because of the many variables in bus design and construction.

Much time was devoted to the discussion of local option for the use of seat belts on school buses. The majority of the Committee opposed allowing local option. Four of the Committee members (representing the Department of Motor Vehicles, Medical Society of Virginia, Virginia Congress of Parents and Teachers, and the Virginia Transportation Safety Board) felt strongly that local school divisions should not be precluded from having the option of using safety belts in new Type I school buses. Further, the Committee took note of the U. S. Department of Transportation's proposed rule providing standards for installation of safety belts on Type I buses as printed in the FEDERAL REGISTER, October 10, 1985.
Recommendation: That the installation of seat belts on Type I (large) school buses should not be mandated.

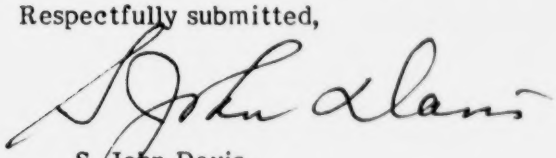
CONCLUSION

Much data, many positions, and a variety of materials were presented to the Committee within its limited work time. Although the members of the Committee were drawn from a variety of disciplines, they developed an understanding of many of the factors and details influencing the day-to-day operation of school transportation programs. The Committee's discussions were conducted in an open and frank atmosphere without generating adversarial relationships. All came to believe that a flexible, commonsense approach is necessary for the management of these complex and costly activities.

The Committee members felt strongly that the general public and the many interested organizations should be better informed of the excellent safety record of school bus transportation. It was also felt that education of the public should be enhanced concerning the crucial hazards identified by the Committee, particularly the dangers to pupils outside the bus.

The Advisory Committee wishes to express its appreciation for the contributions of all persons, including representatives of organizations, who presented important information during the course of this study. Further, the Committee commends R. A. Bynum, Study Coordinator, Clarence R. Gillespie and Fred S. Valentine of the Department's Pupil Transportation Service for their assistance and cooperation, and most especially, Norma Szakal, Staff Attorney, Legislative Services, for her assistance in completing the Committee's report.

Respectfully submitted,



S. John Davis,
Superintendent of Public Instruction

Appendices

A. House Joint Resolution No. 228, 1985

B. Data On School Bus Accident Reports, 1980-85

C. List, Pupils Killed Inside Virginia Public School Buses, 1950-51/1984-85

D. Pupil Transportation Statistics, 1964-65/1984-85

E. Questionnaire, School Bus Safety Study

F. Requirements For School Bus Drivers

GENERAL ASSEMBLY OF VIRGINIA -- 1985 SESSION

HOUSE JOINT RESOLUTION NO. 228

Requesting the Department of Education to study school bus safety.

Agreed to by the House of Delegates, February 4, 1985
Agreed to by the Senate, February 20, 1985

WHEREAS, thousands of school children are transported to and from school daily on school buses in the Commonwealth of Virginia; and

WHEREAS, the safety of these children is of paramount importance to parents and school personnel; and

WHEREAS, the Board of Education promulgates regulations to ensure the safety of school children being transported by school buses; and

WHEREAS, in recent years, controversy has developed concerning the appropriate method for safeguarding the safety of children in school buses; and

WHEREAS, the Virginia Department of Education and the National Highway Transportation Safety Administration have taken the position for some years that "compartmentalizing," i.e., requiring high, padded seat backs, is the most appropriate approach to school bus safety; and

WHEREAS, other organizations, such as Physicians for Automotive Safety and the American Medical Association, favor the use of seat belts in all school buses; and

WHEREAS, other issues related to school bus safety have also arisen recently including driver qualifications, the appropriateness of certain thoroughfares for loading and unloading of students and the use of emergency communications devices; and

WHEREAS, issues related to school bus safety have not been the subject of a legislative study in at least the past ten years; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Department of Education is requested to conduct a study on school bus safety.

In the course of its study, the Department of Education shall examine the need for equipping new and old school buses with seat belts, the efficacy of using seat belts for small students, particularly those in grades K-3, whether the use of seat belts on school buses will result in behavior modification in the use of seat belts in cars, the feasibility of requiring instruction on seat belt safety in the health curricula, the need for emergency communication devices, the need for inspection of older buses and revision of their capacities, the appropriateness of driver qualifications and the appropriateness of the sites for loading and unloading of students.

The Department should complete its work in time to submit its findings and any recommendations to the 1986 Session of the General Assembly.

DATA ON SCHOOL BUS ACCIDENT REPORTS
FOR 1980-81 through 1984-85
WHILE TRANSPORTING PUPILS

TYPES OF ACCIDENTS:

	1980-81	1981-82	1982-83	1983-84	1984-85
Collisions Involving Two or More Vehicles	632	646	598	636	620
Head-on Collisions:					
Straight Road	37	57	63	67	58
Curves	69	55	49	39	53
Total	106	112	112	106	111
Rear End Collisions:					
By Other Vehicles	87	103	103	119	113
By Bus	48	53	40	53	29
Total	135	156	143	172	142
At Intersections:					
Other vehicles entering	63	51	49	62	55
Bus entering	36	33	44	57	48
Other vehicle turning	22	18	21	15	15
Bus turning	59	98	83	66	66
Total	180	201	197	200	184
Backing:					
Other vehicle	17	16	18	19	22
Bus	97	77	62	60	71
Total	114	93	80	79	93
Passing:					
Other vehicles	37	37	23	39	52
Bus	25	18	14	11	11
Bus passing parked vehicle	35	29	29	29	22
Total	97	84	66	79	85

(Types of Accidents - continued on next page)

* Data for 1984-85 is subject to verification

DATA ON SCHOOL BUS ACCIDENT REPORTS FOR 1980-81 through 1984-85 WHILE TRANSPORTING PUPILS

(Continued from previous page)

	1980-81	1981-82	1982-83	1983-84	1984-85
No. of Pupils Injured Outside School Bus.....	11	5	6	4	12
Struck crossing road.....	2	5	6	4	10
Hit on School Grounds.....	0	0	0	0	2
Other.....	9	0	0	0	0
No. of Pupils Killed Outside School Bus.....	0	4	2	1	0
Struck crossing road.....	0	4	2	1	0
Hit on School Grounds.....	0	0	0	0	0
Other.....	0	0	0	0	0
No. Injured Inside School Bus.....	149	158	123	220	174
Pupils injured in vehicle caused accident...	127	145	102	195	151
Drivers.....	22	13	17	25	20
Other.....	0	0	4	5	3
No. Killed Inside School Bus.....	0	0	0	1	0
Pupils.....	0	0	0	0	0
Drivers.....	0	0	0	1	0
Other.....	0	0	0	0	0
Others Injured Outside School Bus.....	48	51	70	57	93
Others Killed Outside School Bus.....	2	0	3	0	3

Twenty-two counties, two towns, and twelve cities reported no accidents occurring while transporting pupils during the school term 1980-81.

Fourteen counties, two towns, and twelve cities reported no accidents occurring while transporting pupils during the school term 1981-82.

Eighteen counties, two towns, and fourteen cities reported no accidents occurring while transporting pupils during the school term 1982-83.

Twenty-eight counties, two towns, and twelve cities reported no accidents occurring while transporting pupils during the school term 1983-84.

The total miles travelled by buses in 1981-82 divided by the number of accidents reported is equal to 112,207 miles, for 1982-83 is 116,567 miles, and 1983-84 is 113,734 miles, which is equivalent to an average of 13 years operation for a school bus.

* Data for 1984-85 is subject to verification

DATA ON SCHOOL BUS ACCIDENT REPORTS
FOR 1980-81 through 1984-85
WHILE TRANSPORTING PUPILS

(Types of Accidents - continued from previous page)

	1980-81	1981-82	1982-83	1983-84	1984-85
Non-collisions.....	24	32	55	53	45
Pedestrians.....	4	2	5	2	12
Bicycles.....	1	4	0	1	1
Motorcycles.....	5	3	1	0	4
Railroad Crossings.....	0	0	0	1	0
On Board Accidents.....	10	2	14	5	9
Bus striking pupils waiting for, leaving, or approaching bus.....	4	6	6	1	6
Total Number of Accidents Reported	680	695	680	699	686

	1980-81	1981-82	1982-83	1983-84	1984-85
Adult Drivers	M 181 + F 482 = 663	M 198 + F 486 = 684	M 163 + F 514 = 677	M 169 + F 528 = 697	M 175 + F 510 = 685
Student Drivers	M 17 + F 0 = 17	M 11 + F 0 = 11	M 3 + F 0 = 3	M 1 + F 1 = 2	M 1 + F 0 = 1
ALL DRIVERS	M 198 + F 482 = 680	M 209 + F 486 = 695	M 166 + D 514 = 680	M 170 + F 529 = 699	M 176 + F 510 = 686

Percentage of Each Type of Accident

1984-85	1983-84	
27	29	percent were at intersections
21	25	percent were rear end collisions
13	11	percent were backing
12	11	percent were passing
16	15	percent were head-on collisions
7	8.0	percent were non-collisions
4	1.0	percent - other

*Data for 1984-85 is subject to verification

Appendix C

PUPILS KILLED INSIDE OF VIRGINIA PUBLIC SCHOOL BUSES

1950-51	Prince Edward County - March 1951 - Five pupils killed inside of bus - Bus struck by train. Three girls 18,18,& 17. Two boys 14 & 15.
1951-52	None
1952-53	None
1953-54	None
1954-55	None
1955-56	None
1956-57	None
1957-58	None
1958-59	None
1959-60	Frederick County - May 1960 - Two pupils killed inside of bus - Bus hit in rear side by lime truck - Both girls 9 & 10.
1960-61	None
1961-62	None
1962-63	None
1963-64	None
1964-65	None
1965-66	None
1966-67	None
1967-68	None
1968-69	King George County - August 1968 - Two pupils killed inside of bus. Bus hit in rear by furniture van. One girl 14. One boy 13.
	Page County - May 1969 - One male, age 10 killed inside of bus. Bus went down 10 ft. embankment.
1969-70	None
1970-71	Montgomery County - Two pupils killed inside of bus. February 1971 Bus hit in left side by dump truck. Two girls 7 & 10.
1971-72	None
1972-73	None
1973-74	None
1974-75	None
1975-76	None
1976-77	Campbell County - March 1977 - Three pupils killed. Two inside - one ejected through entrance door onto ground. Bus struck in rear by five axle tractor semitrailer combination - Three females 7,11, & 14.
1977-78	None
1978-79	None
1979-80	Appomattox County - May 1980 - One (1) pupil killed inside of school bus. Bus struck in rear by tractor trailer truck - Girl, Age 14.
1980-81	None
1981-82	None
1982-83	None
1983-84	None
1984-85	None

Appendix D

Pupil Transportation Statistics, 1964-65 to 1984-85

1	2	3	4	5	6		7	
School Year	No. of Pupils Transported	No. of Buses	No. of Miles Traveled	No. of Accidents	Inside Bus No. of Pupils		Outside Bus No. of Pupils	
					Injuries	Fatalities	Injuries	Fatalities
1964-65	524,857	5,769	346,744	503	132	0	8	5
1965-66	538,579	5,945	49,526,879	503	207	0	10	2
1966-67	555,829	6,157	50,824,192	515	266	0	17	3
1967-68	573,207	6,368	52,060,826	546	249	0	13	1
1968-69	598,773	6,599	54,624,803	502	259	3	12	1
1969-70	618,960	6,808	54,954,507	641	274	0	21	2
1970-71	636,172	7,047	56,600,653	612	259	2	30	5
1971-72	660,207	7,312	59,524,844	883	414	0	15	5
1972-73	669,313	7,521	61,387,385	862	356	0	11	1
1973-74	688,868	7,723	64,050,516	782	320	0	18	3
1974-75	718,851	8,017	66,365,758	797	294	0	12	2
1975-76	736,219	8,199	69,433,445	677	225	0	16	2
1976-77	762,016	8,681	72,553,030	849	280	3	18	2
1977-78	760,849	8,877	76,004,967	849	197	0	18	2
1978-79	759,652	9,060	78,276,159	826	187	0	15	3
1979-80	752,948	9,079	79,279,169	714	200	1	19	3
1980-81	743,706	9,097	79,348,106	680	127	0	11	0
1981-82	724,867	9,003	77,984,165	695	145	0	5	4
1982-83	722,157	9,026	78,419,863	680	102	0	6	2
1983-84	720,984	9,042	79,499,740	699	195	0	4	1
*1984-85	-	-	-	686	151	0	12	0

* Figures for 1984-85 Subject to Verification

Appendix E

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF EDUCATION
P. O. BOX 6Q
RICHMOND, VIRGINIA 23216

SUPTS. MEMO. NO. 57
May 15, 1985

ADMINISTRATIVE

TO: Division Superintendents

FROM: S. John Davis, Superintendent of Public Instruction
M. E. Cale, Associate Superintendent for Financial and Administrative Services

SUBJECT: Questionnaire - School Bus Safety Study, House Joint Resolution Number 228, 1985

The General Assembly, 1985 Session, enacted HJR Number 228 requesting the Department of Education to conduct a study on school bus safety. The resolution has been printed on the reverse side of this memorandum.

The enclosed questionnaire contains questions which, when answered and returned, will provide statewide information on most of the issues listed in the resolution. Some additional safety or operational issues not listed in the Resolution have been included in the questionnaire. If your school division would like to suggest other issues or concerns which should be considered during this study, please list them on an additional page(s) and attach it to the questionnaire.

Information received in response to this communication will be tabulated and provided to a fifteen member Study Committee. This Committee has been appointed to assist the Department in completing the study, making recommendations, and presenting its findings to the 1986 Session of the General Assembly.

If you desire additional information or have questions concerning the study, please contact R. A. Bynum, Associate Director, Pupil Transportation Service at (804) 225-2037.

SJD/MEC/ns

Enclosure

NOTE: This report is not listed in the 1984-85 Calendar of Reports because it is in response to recent legislation.

STATE SUMMARY

Attachment
Administrative Supts. Memo. No. 57
May 15, 1985

Questionnaire

School Bus Safety Study
House Joint Resolution No. 228, 1985

Please answer all questions by checking or entering information which best describes your school system's answer/position. If you wish to amplify an answer to any of the questions, attach an additional page.

1. Should all new school buses purchased after the 1985 model be equipped with passenger seat belts?

   18 - Yes 110 - No

2. Should all existing school buses be retrofitted with passenger seat belts?

   12 - Yes 116 - No

3. Would your division support mandatory use of seat belts by all pupils riding school buses?

   28 - Yes 96 - No

4. Are pupil riders (standees) permitted to stand in the aisle of school buses operated in your school division?

   46 - Yes 83 - No

5. If your answer to No. 4 was "yes", give average total number of standees daily in a.m. 1426, p.m. 1421 for the school year 1984-85.

6. Indicate the number of standees injured during 1984-85 0; 1983-84, if available 1.

7. Would additional buses be needed to eliminate all standees?

   21 - Yes 88 - No

8. Would your division support a no standee regulation?

   95 - Yes 34 - No

9. Indicate the number of buses for which a purchase order has been issued but have not been received 557. (Do not include these in Numbers 10. & 11. below)

   How many of these will be replacement buses 504, capital outlay buses (additional) 53?

10. Total number of approved buses in fleet 10,675. (Include all spare buses)

11. Indicate number of buses in fleet by year model of chassis.

5,442	1978-1985	3,760	1972-1976
938	1977	507	1971 and Older

12. How many buses in your current fleet are equipped with seat belts for all passengers?

322 Type I Conventional School Buses (Usually, 34-64 Passenger capacity)

465 All Other Buses (Usually, Type II Small School Buses up to 20 passenger capacity)

*13. Indicate the number of K-3 grade pupils riding school buses in your system during 1984-85 223,440 Estimated, 1983-84 217,360 Estimated.

14. Would a requirement for use of a seat belt by all pupils riding in school buses enhance the use of seat belts by teenagers while riding in automobiles?

38 - Yes 79 - No

15. Should school buses be equipped with two-way emergency communication equipment?

111- Yes 20 - No

16. If answer to No. 15 was yes, which buses should be equipped?

38 - Special education buses only

19 - Rural route buses only

78 - All buses

17. What type of communication equipment should be used?

101 -Two-way commercial/government type radios with an assigned frequency

9 - Citizen band radios

5 - Mobile telephone

* Figures based on 80% of fall membership

18. Are the current Virginia school bus inspection requirements adequate?

124 - Yes 7 - No

19 Should the inspection of buses be required more frequently for buses 10 years or older?

45 - Yes 86 - No

20. Should there be a mandatory replacement schedule for school buses?

72 - Yes 57 - No

21 If your answer to No. 20 was yes, indicate the maximum number of years buses should be used.

10 Yrs. 37 12 Yrs. 29 14 Yrs. 10 Other 2 (specify)

22. Should the number of classroom hours for school bus driver training be specified?

77 - Yes 54 - No

23. If your answer to No. 22 was yes, indicate the number of hours.

13 Hrs. 13 15 Hrs. 32 17 Hrs. 6 Other 28 (specify)

24. Should the minimum number of days for behind-the-wheel training time with pupils onboard be increased?

44 - Yes 85 - No

25. If your answer to No. 24 was yes, indicate the total number of days recommended.

50% recommended 5 days
Recommendations ranged from 2 days to 25 days

26. Does your division use 17 year old school bus drivers?

11 - Yes 120 - No

27. If your answer to number 26 was yes, indicate the number in each capacity. (Count each driver only once)

Regular	4
Substitute	45
Activity Trips	6
Voc. Tech.	1
Other	0

28. Does your system employ aides for buses transporting children?

77 - Yes 54 - No

29. If your answer to No. 28 was yes, how many aides do you employ for buses transporting handicapped pupils? 633

30. If your answer to No. 28 was yes, how many aides do you employ for buses transporting non-handicapped pupils? 24

31. Should the provisions contained in law and regulation governing school bus loading and unloading sites be changed?

13 - Yes 116 - No

32. If your answer to No. 31 was yes, describe recommended changes.

(1) Minimum distance between stops (2) Use of eight light warning system (3) Separate area from general public on all school sites

33. Does your division have school buses which travel across state boundary lines (Interstate)?

51 - Yes 78 - No

34. If your answer to No. 33 was yes, indicate the number of buses crossing state lines.

36 a.m. Home to school trips each day
36 p.m. School to home trips each day
3,735 Activity/Field trips per year

35. Would your division support an increase in the current 35 miles per hour (mph) maximum speed allowable for a school bus transporting pupils on regular route?

45 - Yes 82 - No

36. If your answer to No. 35 was yes, indicate which change your division would support.

2 - 40 MPH on all type roads
3 - 45 MPH on all type roads
44 - 35 MPH on "secondary" roads and 45 MPH on "primary," U. . S. and Interstate roads

School Division _____ Date _____ Signature of Supt/Designee _____

Please complete and return by JUNE 3, 1985 to:

R. A. Bynum, Associate Director
Pupil Transportation Service
Department of Education
P. O. Box 6Q
Richmond, VA 23216

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IV. Requirements for School Bus Drivers

1. No school board shall hire, employ, or enter into any agreement with any person for the purposes of operating a school bus transporting pupils unless the person shall:
   A. Have a physical examination of a scope prescribed by the Board of Education with the advice of the Medical Society of Virginia and furnish a form prescribed by the Board of Education showing the results of such examination.
   B. Furnish a statement or copy of records from the Division of Motor Vehicles showing that the person, within the preceding five years, has not been convicted of a charge of driving under the influence of intoxicating liquors or drugs, convicted of a felony, or assigned to any alcohol safety action program or driver alcohol rehabilitation program pursuant to Section 18.2-271.1 of the Code of Virginia or, within the preceding 12 months, has been convicted of two or more moving traffic violations or has been required to attend a driver improvement clinic by the Commissioner of the Division of Motor Vehicles pursuant to Section 46.1-514.11.
   C. Furnish a statement signed by two reputable residents of the school division that the person is of good moral character.
   D. Exhibit a license showing the person has successfully undertaken the examination prescribed by Section 46.1-370.
   E. Has reached the age of 17 and has not reached the age of 70 on the first day of the school year. (Section 46.1-169,22.1-178 and Exemption of Hazardous Occupations Order No. 2, U. S. Department of Labor)
2. Any school board may require successful completion of the American Red Cross first-aid course as a condition to employment to operate a school bus transporting pupils.
3. The documents required pursuant to paragraphs 1.A. and 1.B. shall be furnished annually within 30 days prior to the anniversary date of the employment to operate a school bus. A school board may require the statement set forth in paragraph 1.C. to be furnished periodically.
4. The documents required pursuant to this section shall be filed with, and made a part of, the records of the school board employing such person as a school bus operator.
5. The State Department of Education shall furnish to the division superintendents the necessary forms for applicants to use to provide the information required by this section. Insofar as practicable, such forms shall be designed to limit paperwork avoid the possibility of mistakes, and furnish all parties involved with a complete and accurate record of the information required. (Section 22.1-178)
6. As a condition to employment, every school bus driver shall submit a certificate signed by a licensed physician stating that the employee appears free of communicable tuberculosis. The school board may require the submission of such certificates annually, or at such intevals as it deems appropriate, as a condition to continued employment. (Section 22.1-300)
7. No person shall drive a school bus upon a highway in this state unless such person has had a reasonable amount of experience in driving motor vehicles, and shall have passed a special examination indicating the ability to operate a school bus without endangering the safety of pupil passengers and persons using the highway. To prepare for the examination required by this section, any person holding a valid

operator's license issued under the provisions of 46.1-369, may operate, under the direct supervision of a person holding a valid school bus license endorsement, a school bus which contains no pupil passengers. The Division of Motor Vehicles shall adopt such rules and regulations to provide for the examination of persons desiring to qualify to drive such buses in this state and for the granting of permits to qualified applicants. (Section 46.1-370)

8. Every driver of a school bus shall receive instruction before being allowed to operate a bus transporting children. This instruction shall include classroom, demonstration, and behind-the-wheel instruction. The length of the instructional program shall be determined by the experience of the applicant.

A. Classroom instruction shall include, but not be limited to, the following:
   (1) responsibilities of the driver, pupil, parent, principal, and superintendent
   (2) applicable laws and regulations
   (3) local reports and policies governing pupil transportation
   (4) proper driving practices
   (5) planning for emergencies

B. Demonstration instruction
   (1) pre-trip instruction
   (2) care of school bus
   (3) emergency evacuation drills
   (4) proper driving practices
   (5) defensive driving techniques

C. Behind-the-wheel instruction--under supervision of trainer
   (1) operate empty bus until proficient
   (2) operate loaded bus--(minimum-complete route for two days)

The superintendent or his designee shall maintain a record showing that the applicant has completed the training and has been approved to operate a school bus.

9. In-service training shall be devoted to improving the skills, attitudes, and knowledge of all school bus drivers. At least two hours of in-service training shall be provided during the first half of the school year and at least two hours during the second half.

10. The driver of a school bus shall be under the general direction and control of the superintendent and school board and/or the supervisor of transportation, and shall also be accountable to the principal of the school to which transportation is provided.

11. The driver of a school bus shall perform a daily pre-trip safety inspection of the vehicle.

12. The driver of a school bus shall report to the principal misconduct of pupils on the school bus or at waiting stations or stops on the way to or from school and shall be guided by the principal's advice and direction, subject to the regulations of the school board. When it becomes necessary for the driver to correct pupils, the driver shall stop at the nearest and safest place and restore order before proceeding. In no case shall a driver put a pupil off the bus between home and school as a disciplinary measure.